Agilent Ref: 10031260-1
United States Application Serial No. 10/652,063



**AMENDMENTS**

**In the claims:**

1. **(Currently Amended)** A ~~reagent~~ **compound** having the structure (I)

Phos— Cgp— Trl— Cgp'— Nucl (I)

wherein:

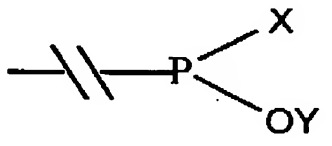
Phos is a reactive phosphorus group **which specifically reacts with a reactive group on a solid support to produce a phosphorous containing linkage group**,

Trl is a triaryl methyl linker group **having three aryl groups, wherein each of the three aryl groups are bound to a central methyl carbon, wherein one of said substituents is bound Cgp and the central methyl carbon is bound to Cgp'**,

Cgp is a linking group linking the reactive phosphorus group and the triaryl methyl linker group, or is a bond linking the reactive phosphorus group and the triaryl methyl linker group,

Nucl is a nucleoside moiety, and

Cgp' is a linking group linking the nucleoside moiety **at the 3'O or the 5'O** and the triaryl methyl linker group, or is a bond linking the nucleoside moiety **at the 3'O or the 5'O** and the **central methyl carbon of the** triaryl methyl linker group; and wherein the reactive phosphorous group has the structure (VI)




(VI)

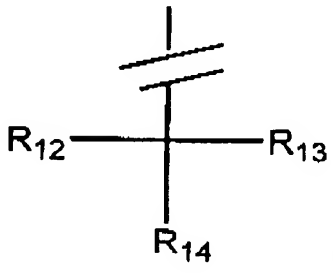
wherein:

the broken line indicates the bond to the ~~Cgp'~~ **Cgp**;

X is selected from the halogen or a secondary amino group; and

Y is selected from hydrido, hydrocarbyl, or substituted hydrocarbyl.**[[.]]**

2. **(Currently Amended)** The ~~reagent~~ **compound** of claim 1, wherein the triaryl methyl linker group has the structure (IV)




(IV)

wherein the broken line represents the bond to the linking group denoted Cgp' in structure (I), and

wherein R12, R13, and R14 are independently selected from unsubstituted or substituted aryl groups, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorus group via the Cgp group.

3. **(Currently Amended)** The ~~reagent~~ **compound** of claim 2, wherein R12, R13, and R14 are independently selected from substituted phenyl and unsubstituted phenyl, provided that one of R12, R13, or R14 is substituted by being bound to the reactive phosphorus group via the Cgp group.

4. **(Currently Amended)** The ~~reagent~~ **compound** of claim 2, wherein R12, R13 and R14 are **independently selected from unsubstituted or** ~~optionally~~ substituted aryl groups ~~independently selected from~~ **selected from** phenyl, biphenyl, naphthanyl, indolyl, pyridinyl, pyrrolyl, ~~thiophenyl,~~ **2-thienyl, 3-thienyl,** furanyl, annulenyl, quinolinyl, and anthracenyl, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorous group via the Cgp group.

5. **(Currently Amended)** The ~~reagent~~ **compound** of claim 4, wherein at least one of R12, R13, and R14 is selected from naphthanyl, indolyl, pyridinyl, pyrrolyl, ~~thiophenyl,~~ **2-thienyl, 3-thienyl,** furanyl, annulenyl, quinolinyl, and anthracenyl, provided that one of R12, R13, and R14 is substituted by being bound

to the reactive phosphorous group via the Cgp group.

6. **(Currently Amended)** The ~~reagent~~ **compound** of claim 2, wherein R12, R13, and R14 are independently selected from phenyl, methoxyphenyl, dimethoxyphenyl, trimethoxyphenyl, and furanyl, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorous group via the Cgp group.

7. **(Cancelled)**

8. **(Currently Amended)** The ~~reagent~~ **compound** of claim 1, wherein the linking group denoted Cgp' comprises a polynucleotide moiety.

9. **(Cancelled)**

10. **(Currently Amended)** The ~~reagent~~ **compound** of claim 1, wherein X is a secondary amino group having the structure — NQ1Q2; in which Q1 and Q2 are independently selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, and cycloalkynyl~~, optionally containing one or more nonhydrocarbyl linkages and optionally substituted on one or more available carbon atoms~~.

11. **(Currently Amended)** The ~~reagent~~ **compound** of claim 1, wherein Y is selected from alkyl, lower alkyl, alkenyl, benzyl, substituted benzyl, aryl, aralkyl, cycloalkyl, electron-withdrawing β-substituted alkyl, electron- withdrawing β-substituted ethyl; electron-withdrawing substituted phenyl; or electron- withdrawing substituted phenylethyl.

12. **(Currently Amended)** The ~~reagent~~ **compound** of claim 1, wherein X is a diisopropyl amino group and Y is selected from methyl, benzyl, substituted benzyl, β-cyanoethyl, methyl-β-cyanoethyl, dimethyl-β-cyanoethyl, phenylsulfonylethyl, methyl-sulfonylethyl, *p*-nitrophenylsulfonylethyl, 2,2,2-trichloro-1,1-dimethylethyl, 2-(4-

pyridyl)ethyl, 2-(2-pyridyl)ethyl, allyl, 4-methylene-1-acetylphenol, β-thiobenzoylethyl, 1,1,1,3,3,3-hexafluoro-2-propyl, 2,2,2-trichloroethyl,*p*-nitrophenylethyl, *p*-cyanophenyl-ethyl, 9-fluorenylmethyl, 1,3-dithionyl-2-methyl, 2-(trimethylsilyl)ethyl, 2-methylthioethyl, 2-(diphenylphosphino)-ethyl, 1-methyl-1-phenylethyl, 3-buten-1-yl, 4-(trimethylsilyl)-2-buten-1-yl, cinnamyl, α-methylcinnamyl, and 8-quinolyl.

13. **(Currently Amended)** A method comprising:

**(a) providing** ~~**contacting**~~ a solid support having an available reactive group bound thereto;

**(b) contacting said solid support** with a ~~**reagent having a reactive phosphorus group attached to a nucleoside moiety via a triaryl methyl linker group, the contacting being performed**~~
**compound having the structure (I)**

**Phos— Cgp— Trl— Cgp'— Nucl (I)**

**wherein:**

**Phos is a reactive phosphorus group which specifically reacts with a reactive group on a solid support to produce a phosphorous containing linkage group,**

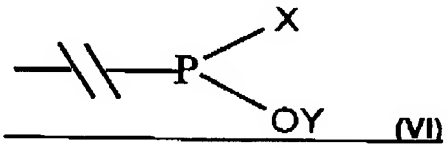
**Trl is a triaryl methyl linker group having three aryl groups, wherein each of the three aryl groups are bound to a central methyl carbon, wherein one of said substituents is bound Cgp and the central methyl carbon is bound to Cgp',**

**Cgp is a linking group linking the reactive phosphorus group and the triaryl methyl linker group, or is a bond linking the reactive phosphorus group and the triaryl methyl linker group,**

**Nucl is a nucleoside moiety, and**

**Cgp' is a linking group linking the nucleoside moiety at the 3'O or the 5'O and the triaryl methyl linker group, or is a bond linking the nucleoside moiety at the 3'O or the 5'O and the central methyl carbon of the triaryl methyl linker group; and**

**wherein the reactive phosphorous group has the structure (VI)**




(VI)

**wherein:**

**the broken line indicates the bond to the Cgp;**

**X is selected from the halogen or a secondary amino group; and**

**Y is selected from hydrido, hydrocarbyl, or substituted hydrocarbyl;**

under conditions and for a time sufficient **for said reactive phosphorous group to covalently bond to said solid support to produce a functionalized solid support** ~~to result in the nucleoside moiety bound to the support via the triaryl methyl linker group, wherein the triaryl methyl linker group is bound to the support via a phosphorus-containing linkage group~~.

14. (Previously Presented) The method of claim 13, wherein the available reactive group is selected from hydroxyl, amino, and thio.

15. **(Currently Amended)** The method of claim 14, wherein X is a secondary amino group having the structure — NQ1Q2; in which Q1 and Q2 are independently selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, and cycloalkynyl~~, optionally containing one or more nonhydrocarbyl linkages and optionally substituted on one or more available carbon atoms~~.

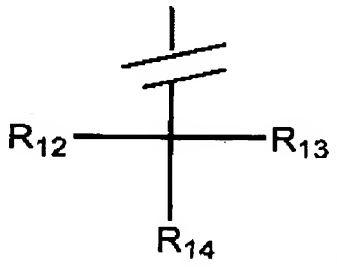
16. (Original) The method of claim 14, wherein Y is selected from alkyl, lower alkyl, alkenyl, benzyl, substituted benzyl, aryl, aralkyl, cycloalkyl, electron-withdrawing β-substituted alkyl, electron-withdrawing β -substituted ethyl; electron-withdrawing substituted phenyl; or electron-withdrawing substituted phenylethyl.

17. (Original) The method of claim 13, wherein the nucleoside moiety has a hydroxyl protecting group bound thereto.

18. (**Currently Amended**) The method of claim 17, **said method** further comprising contacting the **functionalized solid support** ~~nucleoside moiety bound to the support~~ with a combined deprotection/oxidation agent ~~under conditions and for a time sufficient to concurrently remove the hydroxyl protecting group and oxidize the phosphorus-containing linkage group~~.

19. (Original) The method of claim 18, wherein the combined deprotection/ oxidation agent comprises an alpha effect nucleophile.

20. (Original) The method of claim 13, wherein the triaryl methyl linker group has the structure (IV)




(IV)

wherein the broken line represents the bond via which the triaryl methyl linker group is bound to the nucleoside moiety, and

wherein R12, R13, and R14 are independently selected from unsubstituted or substituted aryl groups, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorus group.

21. (Original) The method of claim 20, wherein R12, R13, and R14 are independently selected from substituted phenyl and unsubstituted phenyl, provided that one of R12, R13, or R14 is substituted by being bound to the reactive phosphorus group.

22. (**Currently Amended**) The method of claim 20, wherein R12, R13 and R14 are **independently selected from unsubstituted or** ~~optionally~~ substituted aryl groups ~~independently~~ selected from phenyl, biphenyl, naphthanyl, indolyl, pyridinyl,

pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.

23. (Original) The method of claim 20, wherein at least one of R12, R13, and R14 is selected from naphthanyl, indolyl, pyridinyl, pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.